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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/018,759	03/29/2002	Gerhard Herbig	P/63035-PCT	2761
156	7590	06/09/2005	EXAMINER	
KIRSCHSTEIN, OTTINGER, ISRAEL & SCHIFFMILLER, P.C. 489 FIFTH AVENUE NEW YORK, NY 10017			AHN, SAM K	
			ART UNIT	PAPER NUMBER
			2637	

DATE MAILED: 06/09/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/018,759

Applicant(s)

HERBIG, GERHARD

Examiner

Sam K. Ahn

Art Unit

2637

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 29 March 2002.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-3 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 18 December 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☒ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 032902.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Oath/Declaration

1. The Oath/Declaration filed on 03/29/02 is defective because the filing date of the continuing data, PCT/IB00/00809 is incorrectly stated as June 8, 2002 (was filed on June 8, 2000).

Drawings

2. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, "the QAM signal states present are stored...", as recited in claim 1, lines 1-2, must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must

be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

3. For the formality of the application under the present office practice, applicant(s) is required to replace "Claims" with "I or We Claim", "The Invention Claimed Is" (or the equivalent) before the Claims part of the specification of the instant application. See MPEP 608.01(m).

Claim Objections

4. Claims 1-3 are objected to because of the following informalities:

In claim 1, line 1, delete "Phase" and insert "A phase".

In claim 1, line 3, delete "which decision" and insert "which the decision".

In claims 2 and 3, line 1, respectively, delete "Phase" and insert "The phase".

Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

5. Claims 1-3 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

In claims 1-3, five methods are recited (S1 ~ S5) implemented depending on the decision region, and further recites the methods having variables of $f(ZI)$, $f(ZQ)$, ZI and ZQ . However, the specification does not describe in such a way as to enable one skilled in the art to make and/or use the invention. For example, in the equation: $S1 = FQ f(ZI) - FI f(ZQ)$, there are variables FQ , FI , $f(ZI)$ and $f(ZQ)$. The specification describes $FI = ZI - AI$, on page 3, and further describes Z in page 4. However, further method of calculating FI through finding the values of ZI and AI are not described. This enablement requirement pertains to the rest of the methods.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claims 1-3 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 recites the limitation "ZI" and "ZQ" in line 5. However, it is unclear whether ZI and ZQ are the output of the mixers (MI and MQ in Fig.1) or are the received inputs (without the mixers).

Claims 1, recites "a certain QAM signal state a complex received signal state". It is unclear and indefinite as to what type of a QAM signal state it is referring to.

Furthermore, the quoted limitation is unclear as continuously reciting two different states.

In claim 1, lines 6, recites the limitation "the received signal (ES)", and in line 17, recites the limitation "the decided QAM signal state", wherein there is insufficient antecedent basis for this limitation in the claim. Claims 2 and 3 directly depend on claim 1.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. Claims 1-3 are rejected under 35 U.S.C. 102(b) as being anticipated by Hoffman (cited in IDS filed 03/29/02, USP 4,811,363).

Regarding claim 1, Hoffman teaches a phase error detector for a QAM receiver (see Fig.1) in which all QAM signal states present are stored and each of the QAM signal states lying in a complex signal state plane is enclosed by a decision

region and the phase error detector (40), by threshold value decisions, detects in which decision region of a certain QAM signal state a complex received signal state broken down into its in-phase (x) and its quadrature-phase signal component (y) falls and forms as a function of the detected decision region a phase correction signal (U_{41}) for the carrier phase of the received signal (ES), characterized by the fact that the phase error detector (40) calculates the phase correction signal (U_{41}) according to the detected decision region according to one of the following methods:

$$S1 = FQ f(ZI) - FI f(ZQ)$$

$$S2 = \pm 2 FZ f(ZI)$$

$$S3 = \pm 2 FI f(ZQ)$$

$$S4 = \pm 2 ZI ZQ$$

$S5 = 0$ (see Fig.5 wherein regions having a value of 0 from the bottom left corner rising towards the upper right corner) in which ZI and ZQ are the in-phase and quadrature-phase signal components of the received signal states and FI and FQ the offsets of ZI and ZQ relative to the in-phase and quadrature-phase components of the decided QAM signal state, and that the phase error detector (40) causes a coordination to the decision regions and the individual calculation methods (S1 to S5), so that its static phase characteristic exhibits no additional zeros, except at the lock-in point in which the phase offset between the reference carrier of the receiver and the received signal carrier is zero (as also admitted by applicants in the specification, note p.1, lines 16-17).

Regarding claims 2 and 3, Hoffman teaches all subject matter claimed, as applied to claim 1. Hoffman further teaches wherein ZI , ZQ , $\text{sign}(ZI)$ and $\text{sign}(ZQ)$ are respectively equivalent to $f(ZI)$ or $f(ZQ)$, an offset to the in-phase and quadrature-phase component (note col.4, lines 3-7 and col.11, lines 15-23).

Conclusion

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Barabash et al. USP 5,640,417 teach QAM detector converting a received signal to polar coordinates.

Roberts et al., USP 5,042,052 teach a QAM receiver controlling a VCO to adjust the phase error.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sam Ahn whose telephone number is (571) 272-3044. The examiner can normally be reached on Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jay Patel can be reached on (571) 272-2988. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Sam K. Ahn
5/31/05

TEMESGHEN GHEBREINSAE
PRIMARY EXAMINER

[Signature]
6/6/05
NGJ